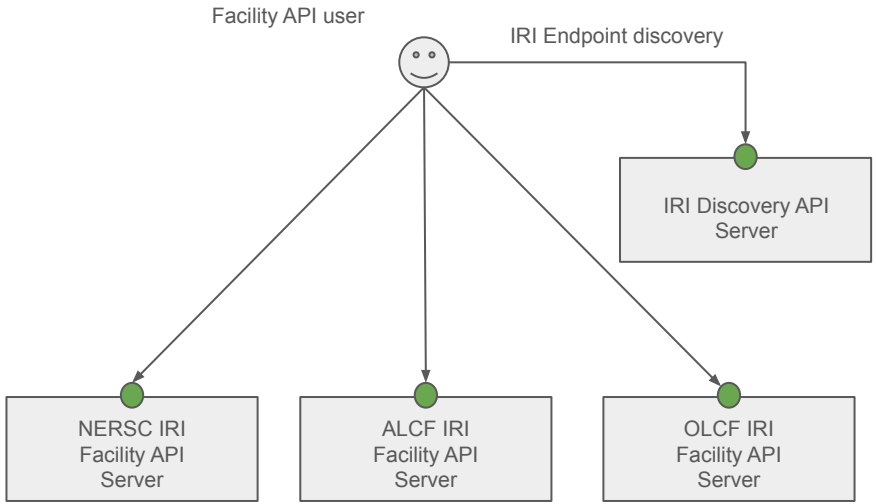
IRI API discussion

2025.02.06

Deployment models: Centralized discovery

- How does a facility API user discover all the endpoints needed to orchestrate a workflow across multiple facilities?
- In this deployment model the facility API user communicates with a centralized discovery service to get a list of facilities and their associated API endpoints
- The facility API user then communicates directly with each facility of interest using the discovered endpoints
- All interfaces understand the IRI authentication token.
- Individual facilities enforce local policies based on their token embedded in IRI token.**

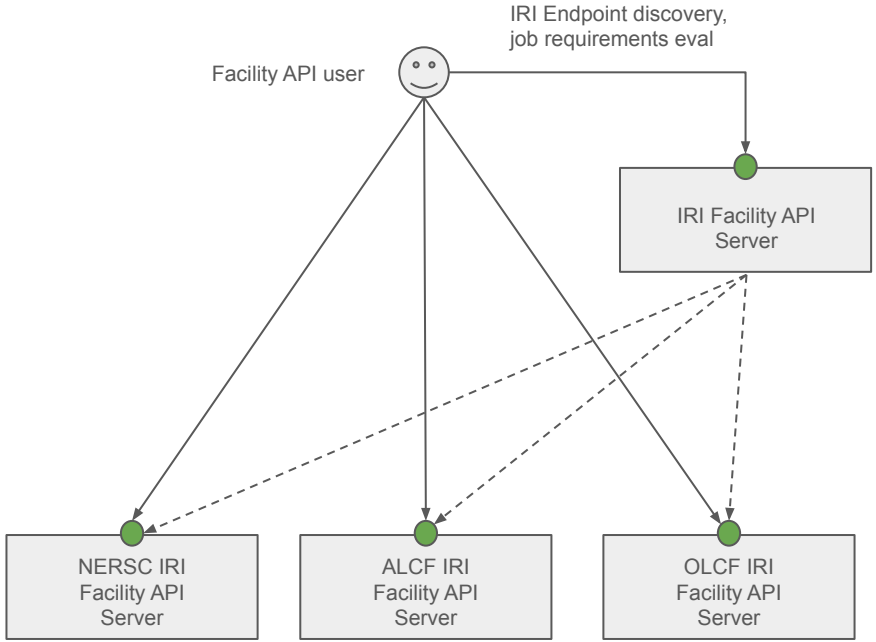


Legend
- Implements standard IRI interface
- Implement proprietary interface

**Assumes for the short term the user we will be allocating individual facility tokens and encapsulate these in an IRI token from a well known signing authority.

Deployment models: Centralized discovery + functions

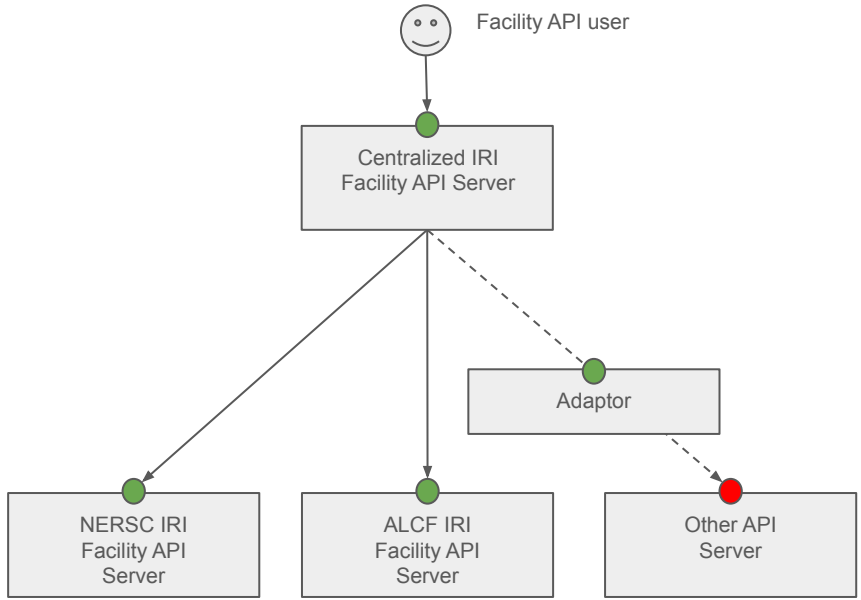
- In this deployment model the facility API user communicates with a centralized service to:
  - Get a list of facilities and their associated API endpoints.
  - Access intelligent functions such as job requirements evaluation across facilities.
- The facility API user then communicates directly with each facility of interest using the discovered endpoints
- All interfaces understand the IRI authentication token
- Individual facilities enforce local policies based on their token embedded in IRI token
- Centralized server performs operations on behalf of the user (using IRI token) so gets a user filtered view.



Legend
- Implements standard IRI interface
- Implement proprietary interface

Deployment models: Centralized IRI Facility API Server

- Single point of contact for Facility API users
  - Provides facility discovery capabilities
  - Proxies requests through to target facility endpoints
  - Can provide advanced capabilities such as job requirements evaluation and dynamic resource distribution across facilities
- Support standard IRI interfaces southbound
- Optionally adapts to proprietary API (internal or external adaptor)
- Green interfaces understand the IRI authentication token, while red interfaces are passed their specific token (from within IRI token)
- Individual facilities enforce local policies based on their token embedded in IRI token
- Centralized server performs operations on behalf of the user (using IRI token) so gets a user filtered view.



Legend

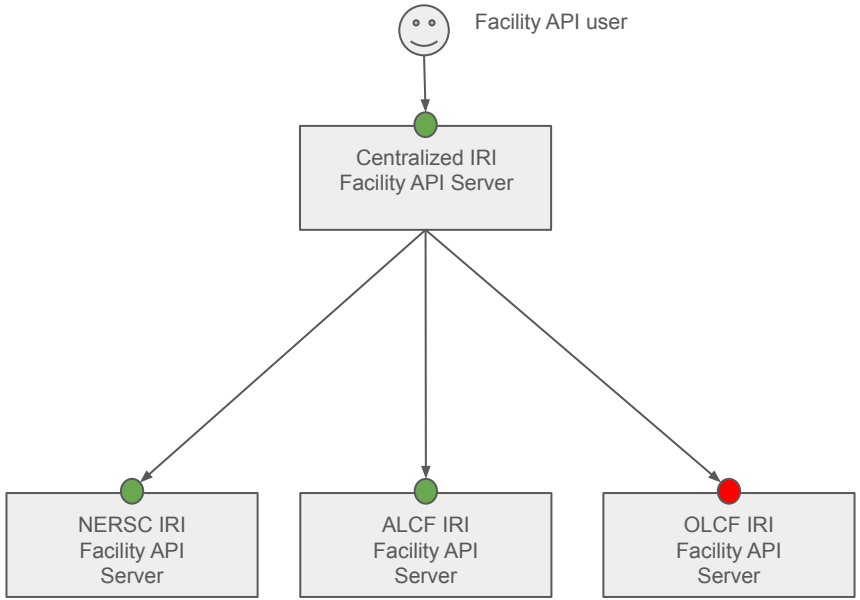
- Implements standard IRI interface
- Implement proprietary interface

Deployment models: Proxy IRI Server ***

- Single point of contact for Facility API users
  - Provides facility discovery capabilities
  - Proxies requests through to target facility endpoints
  - Can provide advanced capabilities such as job requirements evaluation and dynamic resource distribution across facilities
- Support standard IRI interfaces southbound
- Optionally adapts to proprietary API (internal or external adaptor)
- Green interfaces understand the IRI authentication token, while red interfaces are passed their specific token (from within IRI token)
- Individual facilities enforce local policies based on their token embedded in IRI token
- Centralized server performs operations on behalf of the user (using IRI token) so gets a user filtered view.

Legend

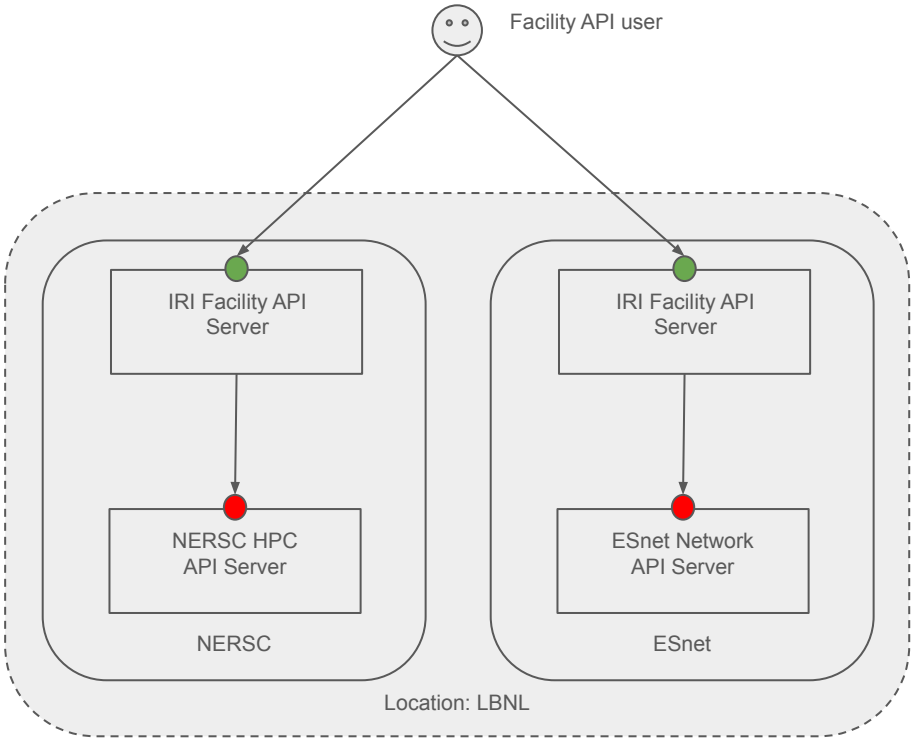
- Implements standard IRI interface
- Implement proprietary interface



Deployment models: Per Facility Facility API Server

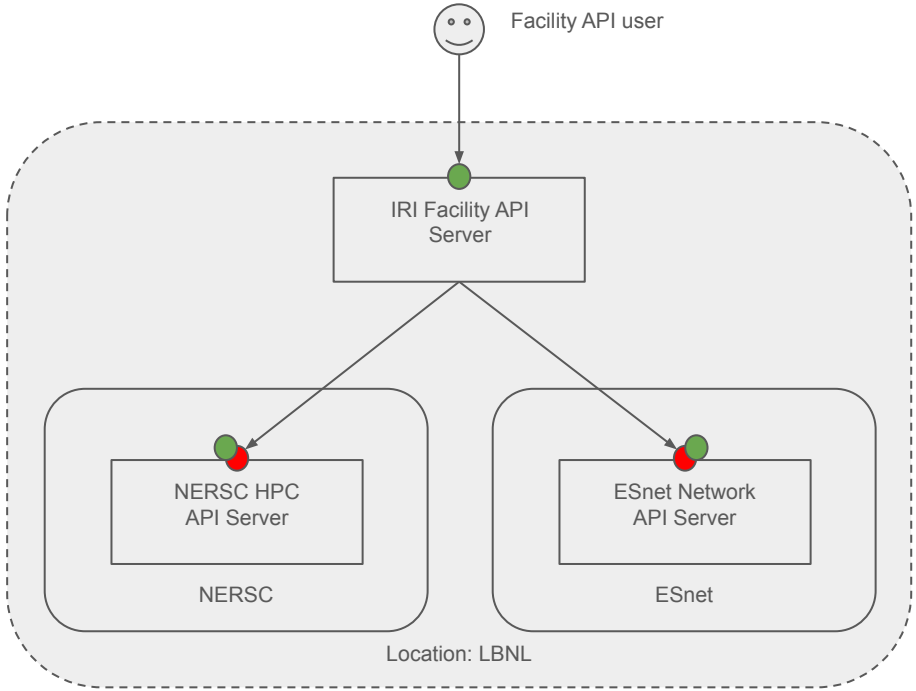
- Each facility at a lab implements the standardized IRI Facility API
- May be an native implementation or a shim/adaptor to their proprietary API.
- Green interfaces understand the IRI authentication token, while red interfaces are passed their specific token (from within IRI token)
- Individual facilities enforce local policies based on their token embedded in IRI token

Legend
- Implements standard IRI interface
- Implement proprietary interface



Deployment models: Lab-wide Facility API Server

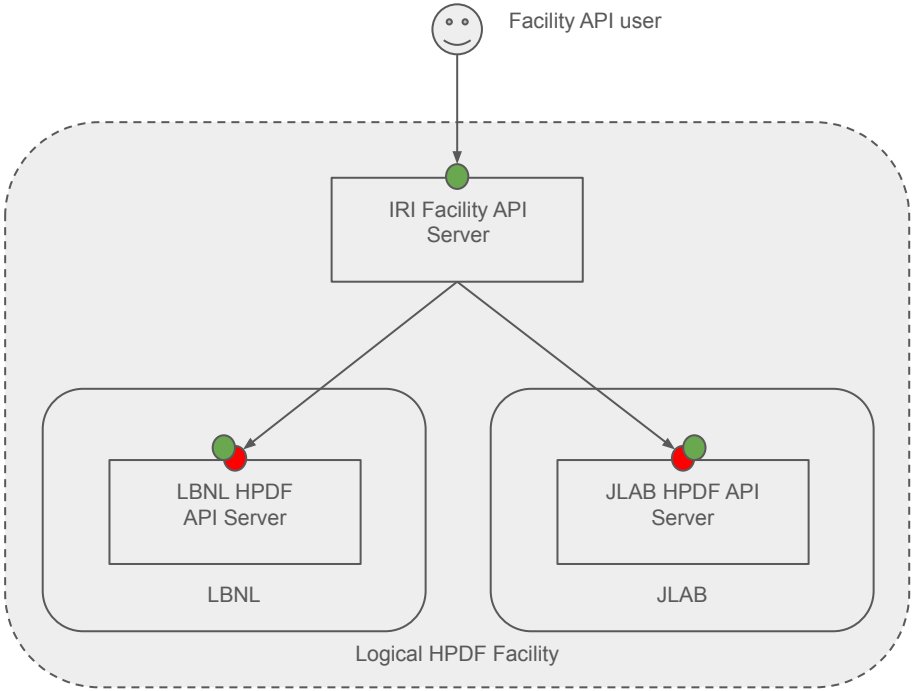
- Implement the standardized IRI Facility API at the lab level to consolidate all hosted facilities
- Lab-wide server may communicate southbound to native IRI implementations or proprietary API
- Policies can be enforced at a lab level, at the facility level, or a combination of the two.



Legend
- Implements standard IRI interface
- Implement proprietary interface

Deployment models: Distributed Facility API Server

- Implement the standardized IRI Facility API at the logical facility level to consolidate distributed facility resources
- Logical facility-wide server may communicate southbound to native IRI implementations or proprietary API.
- Policies can be enforced at a logical facility level, at the lab level, or a combination of the two.



Legend
- Implements standard IRI interface
- Implement proprietary interface

High availability options

Horizon we are looking at for the capabilities we need.

Break up phase 1, 2, 3 and what are we going to solve in each of these phases.

How to discover facility capabilities?

- Facility specific extensions are supported.
- How do we identify when a facility has not implemented a specific capability?
  - Metadata probing capability?
  - OpenAPI should provide an indication of operations and URL not available at the facility.
- Facility policies per user?